Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (**Currently Amended**) A method comprising:

receiving a first packet of information on an input optical signal that occupies a plurality of input channels, each input channel being included in one among an input plurality of distinct wavelength ranges that are respectively in selected International Telecommunication Union (ITU) WDM windows; and

transmitting the first packet of information on an output optical signal that occupies a plurality of output channels, each output channel being included in one among an output plurality of distinct wavelength ranges,

wherein the plurality of input channels includes at least a plurality of ~~**adjacent**~~ WDM channels within one ITU WDM window which comprise:

(A) a reserved wavelength buffer selected from one of the plurality of adjacent WDM channels within the one ITU WDM window; and

(B) a channel on which the first packet is received,

wherein the plurality of output channels includes an active wavelength buffer on which the first packet is transmitted, and

wherein each among the input plurality of wavelength ranges is associated, in order of increasing wavelength, with one among the output plurality of wavelength ranges in order of increasing wavelength, the wavelength range including the reserved wavelength buffer being associated with the wavelength range including the active wavelength buffer.

2. (Original) A method as in claim 1 further comprising:

transmitting, prior to the receiving, information including the first packet on the input optical signal, the transmitting including reserving the reserved wavelength buffer.

3. (Original) A method as in claim 1, further comprising receiving an additional input optical signal having a second packet of information wherein the second packet of information is carried within the additional input optical signal over substantially the channel on which the first packet is received.

4. (Original) A method as in claim 1, further comprising:

prior to transmitting the first packet of information on the output optical signal, extracting label information from the input optical signal, the label information including information about the first packet of information;

generating a control signal according to at least a portion of the label information;

controlling a signal-producing component to reproduce the first packet of information within the output optical signal in the active wavelength buffer; and

re-associating the label information with the first packet of information.

5. (Previously Presented) A method as in claim 4, wherein the label information is carried within the input signal in a channel distinct from an input channel that carries data and distinct from the reserved wavelength buffer and within the output signal in a channel distinct from the active wavelength buffer.

6. (Withdrawn) A method as in claim 4, wherein the signal-producing component comprises:

a local oscillator controlled by the control signal to produce a local oscillator signal, and

a modulator, accepting as one input, the local oscillator signal, and as another input, a signal representing the first packet of information, the modulator further producing as an

output, a modulated output signal including the first packet of information.

7. (Withdrawn) A method as in claim 6, wherein a frequency of the local oscillator signal corresponds to a difference in frequency between the channel on which the first packet is received and the active wavelength buffer.

8. (Withdrawn) A method as in claim 6, wherein the modulator is a Mach-Zehnder modulator.

9. (Withdrawn) A method as in claim 4, wherein the signal-producing component comprises:

a laser, controlled according to the control signal to produce a laser signal, and

a semiconductor optical amplifier, accepting as one input the laser signal, and as another input a signal representing the first packet of information, the semiconductor optical amplifier further producing as an output, a modulated output signal including the first packet of information.

10. (Previously presented) A method comprising:

receiving a first packet of information on an input optical

signal that occupies a plurality of input channels, each input channel being included in one among an input plurality of distinct wavelength ranges;

transmitting the first packet of information on an output optical signal that occupies a plurality of output channels, each output channel being included in one among an output plurality of distinct wavelength ranges,

wherein the plurality of input channels includes at least a plurality of adjacent WDM channels within one International Telecommunication Union (ITU) WDM window which comprise:

(A) a reserved wavelength buffer, and

(B) a channel on which the first packet is received,

wherein the plurality of output channels includes an active wavelength buffer on which the first packet is transmitted, and

wherein each among the input plurality of wavelength ranges is associated, in order of increasing wavelength, with one among the output plurality of wavelength ranges in order of increasing wavelength, the wavelength range including the reserved wavelength buffer being associated with the wavelength range including the active wavelength buffer;

prior to transmitting the first packet of information on the output optical signal, extracting label information from the

input optical signal, the label information including information about the first packet of information;

generating a control signal according to at least a portion of the label information;

controlling a signal-producing component to reproduce the first packet of information within the output optical signal in the active wavelength buffer; and

re-associating the label information with the first packet of information,

wherein the signal-producing component comprises:

a laser, controlled according to the control signal to produce a laser signal, and

a semiconductor optical amplifier, accepting as one input the laser signal, and as another input a signal representing the first packet of information, the semiconductor optical amplifier further producing as an output, a modulated output signal including the first packet of information, wherein the laser signal has a frequency which corresponds to a difference in frequency between the channel on which the first packet is received and the active wavelength buffer.

11. (Original) A method as in claim 1, further comprising:

extracting label information, the first packet of

information, and a carrier from the input optical signal;

producing a first electronic signal representing information from the first packet of information; and

producing a second electronic signal representing the label information,

wherein transmitting the first packet of information further comprises modulating the carrier with the first and second electronic signals to produce the output optical signal.

12. (Withdrawn) A method as in claim 1, further comprising:

extracting label information and the first packet of information from the input optical signal;

producing a first electronic signal representing information from the first packet of information;

producing a second electronic signal representing the label information; and

controlling a first and second laser diode according to the first and second electronic signals, respectively, to produce the output optical signal.

13. (**Currently Amended**) A device comprising:

an optical receiver, the optical receiver configured and arranged to receive a first packet of information on an input

optical signal that occupies a plurality of input channels, each input channel being included in one among an input plurality of wavelength ranges that are respectively in selected International Telecommunication Union (ITU) WDM windows;

and an optical transmitter, the optical transmitter being configured and arranged to transmit an output optical signal that occupies a plurality of output channels, each output channel being included in one among an output plurality of wavelength ranges,

wherein the plurality of input channels includes at least a plurality of ~~adjacent~~ WDM channels within one ITU WDM window which comprise:

(A) a reserved wavelength buffer selected from one of the plurality of adjacent WDM channels within the one ITU WDM window; and

(B) a channel on which the first packet is received,

wherein the plurality of output channels includes an active wavelength buffer on which the first packet is transmitted, and

wherein each among the input range of wavelength portions is associated, in order of increasing wavelength, with one among the output plurality of wavelength ranges in order of increasing wavelength, the wavelength range occupied by the reserved

wavelength buffer being associated with the wavelength range occupied by the active wavelength buffer.

14. (Original) A device as in claim 13, wherein the optical receiver is further configured and arranged to receive an additional input optical signal having a second packet of information wherein the second packet of information is carried within the second input optical signal over substantially the channel on which the first packet is received.

15. (Original) A device as in claim 13, further comprising:

a label reader, configured and arranged to, prior to the transmitting of the output optical signal, extract label information from the input optical signal, the label information including information about the first packet of information;

a control signal generator, configured and arranged to generate a control signal according to at least a portion of the label information;

a signal-producing component, configured and arranged to reproduce the first packet of information within the output optical signal in the active wavelength buffer; and

a labeling component, configured and arranged to associate the label information with the first packet of information.

16. (Withdrawn) A device as in claim 13, wherein the signal-producing component comprises:

a local oscillator controlled by the control signal to produce a local oscillator signal, and

a modulator, accepting as one input, the local oscillator signal, and as another input, a signal representing the first packet of information, the modulator further producing as an output, a modulated output signal including the first packet of information.

17. (Withdrawn) A device as in claim 16, wherein a frequency of the local oscillator signal corresponds to a difference in frequency between the channel on which the first packet is received and the active wavelength buffer.

18. (**Withdrawn and Currently Amended**) A device as in claim 16, wherein the modulator is a Mach-~~**Zender**~~ **Zehnder** modulator.

19. (Withdrawn) A device as in claim 15, wherein the signal-producing component comprises:

a laser, controlled according to the control signal to produce a laser signal, and

a semiconductor optical amplifier, accepting as one input the laser signal, and as another input a signal representing the first packet of information, the semiconductor optical amplifier further producing as an output, a modulated output signal including the first packet of information.

20. (Previously presented) A device comprising:

an optical receiver, the optical receiver configured and arranged to receive a first packet of information on an input optical signal that occupies a plurality of input channels, each input channel being included in one among an input plurality of wavelength ranges;

and an optical transmitter, the optical transmitter being configured and arranged to transmit an output optical signal that occupies a plurality of output channels, each output channel being included in one among an output plurality of wavelength ranges,

wherein the plurality of input channels includes at least a plurality of adjacent WDM channels within one International Telecommunication Union (ITU) WDM window which comprise :

(A) a reserved wavelength buffer, and

(B) a channel on which the first packet is received,

wherein the plurality of output channels includes an active wavelength buffer on which the first packet is transmitted, and

wherein each among the input range of wavelength portions is associated, in order of increasing wavelength, with one among the output plurality of wavelength ranges in order of increasing wavelength, the wavelength range occupied by the reserved wavelength buffer being associated with the wavelength range occupied by the active wavelength buffer;

a label reader, configured and arranged to, prior to the transmitting of the output optical signal, extract label information from the input optical signal, the label information including information about the first packet of information;

a control signal generator, configured and arranged to generate a control signal according to at least a portion of the label information;

a signal-producing component, configured and arranged to reproduce the first packet of information within the output optical signal in the active wavelength buffer; and

a labeling component, configured and arranged to associate the label information with the first packet of information

wherein the signal-producing component comprises:

a laser, controlled according to the control signal to produce a laser signal, and

a semiconductor optical amplifier, accepting as one input the laser signal, and as another input a signal representing the first packet of information, the semiconductor optical amplifier further producing as an output, a modulated output signal including the first packet of information, and

wherein the laser signal has a frequency which corresponds to a difference in frequency between the channel on which the first packet is received and the active wavelength buffer.

21. (Withdrawn) A device as in claim 13, wherein the input optical signal includes a carrier signal and label information, the device further comprising:

at least one filter, configured and arranged to extract the carrier signal from the input optical signal;

a label reader, configured and arranged to extract label information from the input optical signal;

a label writer, configured and arranged to produce a first electronic signal representing the extracted label information;

a signal regenerator, configured and arranged to produce a second electronic signal representing the first packet of information; and

a modulator configured and arranged to modulate the carrier with the first and second electronic signals to produce the output optical signal.

22. (Withdrawn) A device as in claim 13, further comprising:

a label writer, configured and arranged to produce a first electronic signal representing the label information;

a signal regenerator, configured and arranged to produce a second electronic signal representing the first packet of information; and

a first and second laser diode, controlled according to the first and second electronic signals, respectively, to produce the output optical signal.

23. (**Currently Amended**) A method of transmitting a signal, comprising:

receiving a broadband input optical signal including a payload and label information that are carried in a plurality of input WDM channels that are respectively within selected International Telecommunication Union (ITU) WDM windows, wherein each ITU WDM window includes a plurality of ~~adjacent~~ input WDM

channels with one selected input WDM channel being empty as a buffer **WDM channel**;

receiving the label information with a baseband optical receiver;

**converting payload data carried in one input WDM channel to the buffer WDM channel to leave the one input WDM channel available for carrying different data;**

modifying the label information to produce modified label information **to reflect the conversion of the payload data from the one input WDM channel to the buffer WDM channel**; and

re-combining the modified label information with the payload **carried by the WDM channels** to produce an output optical signal including the payload and the modified label information.

Claims 24-30: Canceled.

31. (**Currently Amended**) A device, comprising:

an optical input port to receive a wavelength-division multiplexed (WDM) signal having a plurality of different WDM channels within each single International Telecommunication Union (ITU) WDM window, wherein at least one of the WDM **channels** ~~channel~~ is empty and is reserved as a buffer channel;

an optical splitter to split the received WDM signal into first, second and third optical signals;

a label processing module to process label information in the first optical signal to produce a first electrical control signal having new label information for a channel shifting arrangement;

an optical filter to filter the second optical signal to remove modulation bands thereon to produce an optical carrier signal;

a data signal regenerator to receive the third optical signal to process data in each WDM channel in the third optical signal to generate a second electrical control signal having data in the received WDM signal; and

an optical modulator to modulate the optical carrier signal in response to the first and the second electrical control signals to shift a selected WDM channel to the buffer channel according to the channel shifting arrangement to produce a new WDM signal.

32. (Previously Presented) The device as in claim 31, wherein the signal regenerator comprises:

an optical filter to filter and remove label information from the third optical signal;

an optical receiver to convert the filtered third optical signal into an electrical signal having input data;

an electronic signal regenerator to generate an electrical data signal having the input data; and

a modem to produce the second electrical control signal in response to the electrical data signal.

33. (Previously Presented) The device as in claim 32, wherein said electronic signal generator is coupled to receive an input from the label processing module and to drop input data of a selected WDM channel in response to the input.

34. (Previously Presented) The device as in claim 31, wherein the label processing module comprises:

an optical receiver to convert the first optical signal into a first signal;

a label processor to process the first signal and to produce a new label;

a label writer to produce a label writing signal in response to the new label; and

a modulator to produce the first electrical control signal in response to the label writing signal.

Claims 35-48: Canceled.

49. (**Currently Amended**) A method, comprising:

separating a received wavelength-division multiplexed (WDM) signal comprising a plurality of different WDM channels within a single International Telecommunication Union (ITU) WDM window into a first optical signal carrying a WDM channel that has label information of the WDM channels, and a second optical signal at an optical carrier frequency without WDM channels, and a third optical signal comprising WDM channels carrying data and at least one empty WDM channel which is reserved as a buffer channel;

converting the third optical signal into an electronic data signal wherein **a signal channel corresponding to** a selected WDM channel is shifted to **a signal channel that corresponds to** the buffer channel;

converting the first optical signal into an electronic label signal which has new label information to reflect updated channel information after channel shifting in **the** electronic data signal; and

modulating the second optical signal to produce a new optical WDM signal having WDM channels therein which carry a new label channel with the updated channel information and data.

50. (Previously presented) The method as in claim 49, further comprising dropping data of a WDM channel and adding new data to the dropped WDM channel as a new WDM channel in the electronic data signal so that the new optical WDM signal carrying the new WDM channel.

51. (Previously presented) The method as in claim 49, wherein the WDM signal is an optical single sideband (OSSB) modulation signal and different WDM channels and a channel carrying the label information are different modulation bands in the OSSB modulation signal, and the method comprising performing an OSSB modulation on the second optical signal to produce the new optical WDM signal.

52. (Previously presented) The method as in Claim 10, wherein each of the input and output optical signals is a wavelength-division multiplexed (WDM) signal comprising a plurality of different WDM channels within a single International Telecommunication Union (ITU) WDM window, and wherein each of the input and output channels occupies a WDM channel.

53. (Withdrawn) The method as Claim 52, wherein each WDM signal is an optical single sideband (OSSB) modulation signal and different WDM channels and a channel carrying the label information are different modulation bands in the OSSB modulation signal.

54. (Previously presented) The device as in Claim 20, wherein each of the input and output optical signals is a wavelength-division multiplexed (WDM) signal comprising a plurality of different WDM channels within a single International Telecommunication Union (ITU) WDM window, and wherein each of the input and output channels occupies a WDM channel.

55. (Withdrawn) The device as Claim 54, wherein each WDM signal is an optical single sideband (OSSB) modulation signal and different WDM channels and a channel carrying the label information are different modulation bands in the OSSB modulation signal.

Claims 56-62: Canceled.

63. (**New**) A method, comprising:

receiving an optical wavelength-division multiplexed (WDM) signal having an optical carrier and WDM channels at WDM channel frequencies different from the optical carrier in an optical WDM network,

separating the received WDM signal into a first optical signal carrying a WDM channel that has label information of the input WDM signal, and a second optical signal which is the optical carrier only, and a third optical signal comprising WDM channels carrying data;

converting the first optical signal into an electronic label signal which has label information of the WDM channels in the received WDM signal;

optically filtering the third optical signal, in response to a control signal generated from the electronic label signal, to produce a filtered third optical signal that carries a selected WDM channel;

converting the filtered third optical signal into an electrical signal to extract data of the selected WDM channel and to make the selected WDM channel available for carrying data; and

modulating the second optical signal to carry a new WDM channel and a new WDM label channel, wherein the new WDM label channel includes channel information of the new WDM channel.

64. (**New**) The method as in claim 63, wherein the new WDM channel and the selected WDM channel are at a same WDM channel frequency.

65. (**New**) The method as in claim 63, wherein the new WDM channel and the selected WDM channel are at different WDM channel frequencies.

66. (**New**) A device, comprising:

an optical input port to receive an optical wavelength-division multiplexed (WDM) signal having an optical carrier and WDM channels at WDM channel frequencies different from the optical carrier,

an optical element to separate the received optical WDM signal into first, second and third optical signals;

a label processing module to process label information of the received optical WDM signal in the first optical signal to produce a first control signal;

a first optical filter to filter the second optical signal to remove any modulation bands thereon to produce a filtered second optical signal which includes the optical carrier only;

a second optical filter to filter the third optical signal, in response to the fist control signal, to produce a filtered third optical signal that carries a selected WDM channel;

a signal regenerator to extract data of the selected WDM channel to produce a dropped signal containing the extracted data; and

an optical modulator to modulate the filtered second optical signal to carry a new WDM channel and a new WDM label channel, wherein the new WDM label channel includes channel label information of the new WDM channel.

67. (**New**) The device as in claim 66, wherein optical modulator modulates the filtered second optical signal to place the new WDM channel at the same WDM channel frequency as the selected WDM channel.

68. (**New**) The device as in claim 66, wherein optical modulator modulates the filtered second optical signal to place the new WDM channel at a WDM channel frequency different from the selected WDM channel.